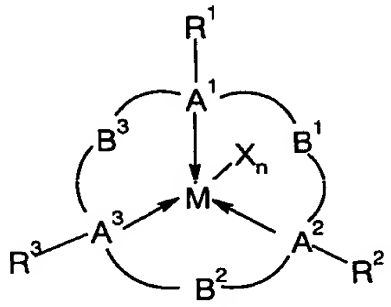
We claim:

1. A process for the polymerization of olefins, which comprises carrying out the polymerization in the presence of catalysts comprising the following components:

(A) at least one complex of a transition metal with a tridentate macrocyclic ligand which bears at least one substituent having a donor function and

(B) one or more activator compounds.

2. A process as claimed in claim 1, wherein the component (A) is a compound of the formula I

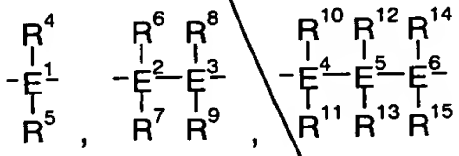


I

where the variables have the following meanings:

M is a transition metal of groups 3 to 12 of the Periodic Table,

B^1-B^3 are each a divalent radical selected from the group consisting of



where

E^1-E^6 are silicon or carbon and not more than two of E^4-E^6 are silicon,

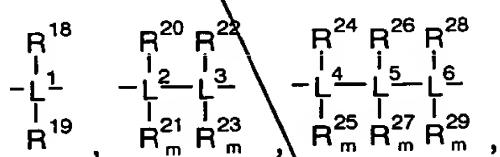
A^1-A^3 are nitrogen or phosphorus,

R^1-R^{15} are hydrogen, C_1-C_{20}-alkyl, 5- to 7-membered cycloalkyl which may in turn bear a C_6-C_{10}-aryl group as

substituent, C_2-C_{20}-alkenyl, C_6-C_{20}-aryl, alkylaryl having from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, SiR^{32}_3 or a radical of the formula -Z-D, where the organic radicals R^1-R^{15} may be substituted by halogen(s) and any two geminal or vicinal radicals R^1-R^{15} may also be joined to form a five- or six-membered ring, and at least one of the radicals R^1-R^{15} is a radical -Z-D, where D is a functional group having the following meanings:

D is $NR^{16}R^{17}$, NR^{16}, OR^{16}, O, SR^{16}, S, $PR^{16}R^{17}$, SO_3R^{16}, $OC(O)R^{16}$, CO_2, $C(O)R^{16}$, $C(NR^{16})R^{17}$, CN or a five- or six-membered heterocyclic ring system, where the radicals R^{16}-R^{17} may also be joined to Z to form a five- or six-membered ring;

Z is a divalent radical selected from the group consisting of:



where

L^1-L^6 are silicon or carbon, not more than two of L^4-L^6 are silicon and m=0 if any two of the vicinal radicals R^{20}, R^{22}, R^{24}, R^{26} and R^{28} form an aromatic ring or a double bond is formed between two adjacent L^2-L^6, and otherwise m=1,

X are, independently of one another, fluorine, chlorine, bromine, iodine, hydrogen, C_1-C_{10}-alkyl, C_2-C_{10}-alkenyl, C_6-C_{20}-aryl, alkylaryl having 1-10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, $NR^{30}R^{31}$, OR^{30}, SR^{30}, SO_3R^{30}, $OC(O)R^{30}$, CN, SCN, =O, β-diketonate, BF_4-, PF_6- or bulky noncoordinating anions,

R^{16}-R^{31} are hydrogen, C_1-C_{20}-alkyl, 5- to 7-membered cycloalkyl which may in turn bear a C_6-C_{10}-aryl group as substituent, C_2-C_{20}-alkenyl, C_6-C_{20}-aryl, alkylaryl having from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, SiR^{32}_3, where the organic radicals R^{16}-R^{31} may be substituted by

halogen(s) and any two geminal or vicinal radicals R^{16}-R^{31} may also be joined to form a five- or six-membered ring,

R^{32} are, independently of one another, hydrogen, C_1-C_{20}-alkyl, 5- to 7-membered cycloalkyl which may in turn bear a C_6-C_{10}-aryl group as substituent, C_2-C_{20}-alkenyl, C_6-C_{20}-aryl, alkylaryl having from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part and any two geminal radicals R^{32} may also be joined to form a five- or six-membered ring,

n is a number from 1 to 4 which corresponds to the oxidation state of M or, if D is covalently bound to the metal center M, the oxidation state of M minus the number of groups D covalently bound to M, and, furthermore, the value of n is reduced by 1 for each X=oxygen.

3. A process as claimed in claim 2, wherein only R^1 is a radical -Z-D.

4. A process as claimed in claim 2 or 3, wherein B^1, B^2 and B^3 are identical.

5. A process as claimed in any of claims 2 to 4, wherein D is oxygen, NR^{16}, $NR^{16}R^{17}$ or CN.

6. A process as claimed in any of claims 1 to 5, wherein the transition metal M comes from groups 3 to 8 of the Periodic Table.

7. A process as claimed in any of claims 1 to 6, wherein the transition metal M comes from group 6 of the Periodic Table.

8. A process as claimed in any of claims 1 to 7, wherein a compound selected from the group consisting of aluminoxane, dimethylanilinium tetrakispentafluorophenylborate, trityl tetrakispentafluorophenylborate and trispentafluorophenylborane is used as activator compound (B).

9. A process as claimed in any of claims 1 to 8, wherein at least one olefin selected from the group consisting of ethene, propene, 1-butene, 1-pentene, 1-hexene, 1-heptene or 1-octene is polymerized.

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10. A process as claimed in any of claims 1 to 9, wherein the polymerization is carried out in suspension or in the gas phase.

11. A process as claimed in any of claims 1 to 10, wherein at least one metal complex (A) in the presence of at least one catalyst (C) customary for the polymerization of olefins and, if desired, one or more activator compounds (B) is used.

12. A catalyst system comprising the following components:

a) at least one transition metal complex (A) as defined in any of claims 1 to 7 and
b) at least one activator compound (B).

13. An olefin polymer obtainable by a process as claimed in any of claims 1 to 11.